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MONTHLY REVIEW

Published by the

American Electro-Platers Society

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OF THE
SCIENCE OF ELECTRO-PLATING

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Teach me that sixty minutes make an hour, sixteen ounces a pound and one hundred cents a dollar.

Help me to live so that I can lie down at night with a clear conscience, without a gun under my pillow and unhaunted by the faces of those to whom I have brought pain.

Grant that I may earn my meal ticket on the square and that in earning it, I may not stick the gaff where it does not belong.

Deafen me to the jingle of tainted money and the rustle of unholy skirts.

Blind me to the faults of other fellows, but reveal to me my own.

Guide me so that each night when I look across the dinner table at my wife, who has been a blessing to me, I will have nothing to conceal.

Keep me young enough to laugh with my children.

And when comes the smell of flowers, the soft tread of feet and the crunch of wheels out in front, let the ceremony be simple and the epitaph short:—"HERE LIES A MAN."

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Editors' Office, 4156 Botanical Ave., St. Louis, Mo.

Vol. 7 SEPTEMBER No. 9

NEW AMENDMENTS

Recently all branch secretaries have received copies of the amendments to our Constitution passed at the recent convention, yet I have been requested to call attention to some that touch upon the work as editor, so that reports will not conflict with that of the Supreme Secretary. First, in order that new members may receive the Monthly Review at once, the branch secretaries must forward their names to be certified by Supreme Secretary who, in turn, notifes the editor. This also applies to reinstatements and transfers of members. Names of applicants for membership should be sent direct to the editor. Transfer books have been printed and each branch secretary should have one in order to comply with new law, and members transfering must be paid up three months in advance to allow time for regular transfer. The transfer book contains 25 transfers and are supplied for 35 cents.

Four times a year, on the first day of August, November, February and May, the branch secretary is to furnish the Supreme Secretary a complete list of membership, and should not forget to forward to the editor all papers for publication and reports of each meeting within seven days after each meeting.

The other amendments, regarding new branches; also credentials to annual convention, will appear in new Constitution in time for action.

The authorized assessment of 10 per rent, or 50 cents on each member, to provide for this fiscal year, is to be paid quarterly by each branch, and the first quarter is past due.

In reference to the admission of assistant foreman platers as associate members, I dislike to take advantage of my position to express my views. I have received letters from members both for and against, but on account of limited space could not publish them. Many branches will have acted on this amendment before this issue reaches you, and it should be settled with due consideration for the best interests to the active members of the society, and not on local conditions.

We take this opportunity to announce "Bridgeport Number" in January. Providence-Attleboro have accepted, but have not set the month.

TO ALL BRANCH SOCIETY SECRETARIES

The delegates to the Rochester Convention in July voted as being in favor of the continuation of research work along electroplating lines and pledged the support of the American Electro-Platers' Society to the Bureau of Standards in order to continue and extend the work they have been doing along this line for the past several years.

The plan most favored is to secure pledges from a number of large employers to contribute $100.00 per year each for a three-year period, to supplement the amount set aside by the Bureau for this purpose, the funds raised for this purpose to be administered by the society. We believe that there are many manufacturers who could be sufficiently interested in the work of the Bureau to help finance a work of this kind.

Last year the Research and Standardization Committee requested the branch secretaries to forward the names of 25 manufacturers in their district having plating plants to Dr. W. Blum of the Bureau of Standards. The returns from the secretaries was so small that it was thought inadvisable to proceed with the matter last year. Possibly the committee were too enthusiastic and over-optimistic in the matter. But even so, we are still confident that something can be accomplished along this line, and in view of the fact that the appropriation for the Bureau of Standards will be less for this year than it was last year, our only reasonable hope of getting any amount of research work done will be through this or some similar plan.

To this end the committee requests that each branch secretary, after consulting with his Board of Managers and other officers of the branch, forward to this office the names of ten manufacturers in their neighborhood who might be interested along this line. Give us their correct firm names, addresses and kind of business carried on. We will take care of the correspondence with the firms listed.

Kindly see that the list is returned to the writer by September 15th at the latest.

Yours very truly,

WALTER FRAINE,

Chairman Research and Standardization Committee.

507 Grand Ave., Dayton, Ohio.

The "Movette" was indeed a novelty. Everybody wanted to be in the picture and was sure on hand to see themselves. Even the dignified supreme officials were all smiles, but they couldn't beat the Rochester crowd when the lunch basket was around. It was a climax to a successful convention and is not forgotten so soon.

REPORT ON ELECTRO-PLATING INVESTIGATIONS CONDUCTED BY THE BUREAU OF STANDARDS

Submitted to American Electro-Platers' Society, July 1, 1920.

During the first part of the fiscal year the work upon the effect of pickling on the physical properties of steels was completed and the results were published. It was impossible, however, to complete the work which was planned upon the effect of plating operations on the physical properties of steel. As opportunity offers, it is hoped to finish this investigation.

Some time was also devoted to the study of zinc plating solutions, but it was impossible to carry these experiments to completion. This subject is greatly in need of study, and such work should be carried on as soon as possible.

Most of the time of this section during the year has been devoted to the co-operation with the Bureau of Engraving and Printing, in connection with the installation of a new plant for the electrolytic production of printing plates. The preliminary studies were carried out at the Bureau of Standards, and the plant was designed and installed under the supervision of this Bureau. We have also co-operated in working out the manufacturing details of the process. This plant is now in operation and is producing plates which have yielded very satisfactory service. It is hoped that by additional research and control work further improvements may be made which will permit greater production and service.

Since this work for the Bureau of Engraving and Printing required practically all the services of the section, it was not possible to carry on any extended or fundamental investigations of plating. The knowledge and experience gained, however, in connection with the operation of copper and nickel solutions will, it is believed, be of value both to electrotypers and electro platers. So far as possible, the information gained in this connection will be made public for the benefit of the above industries.

Illustrated lectures upon the structure of electrodeposited metals were given to branches of the American Electro-Platers' Society located in a number of the principal cities. Through such lectures and through the resulting discussions and correspondence, it is believed that the work carried on in this field can be made immediately useful to the electro platers, chemists and manufacturers, and the value and possibilities of such research work can be emphasized. The American Electro-Platers' Society has been of great assistance in promoting an interest in and application of the results of scientific work in the field of electro plating.

Owing to reduced appropriations, the funds available for research work on electro plating during the coming year will

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Owing to reduced appropriations, the funds available for research work on electro plating during the coming year will

probably be somewhat less than during the past year. Since in addition the continuance of the work for other Government departments will require a considerable proportion of the available services, it is impossible at this time to plan any extended investigations. So far as conditions permit, however, an effort will be made to complete those investigations now under way and to secure as much information as possible of interest to the electro platers. If the American Electro-Platers' Society secures through the co-operation of interested manufactures, funds for research work, the Bureau of Standards will gladly furnish facilities and assistance in conducting such investigations as may be possible with the funds that are thereby made available.

In order that the studies conducted by the Bureau of Standards may be made immediately useful, electro platers are urged to send to us any requests for information desired by them or any new or unusual observations regarding this subject. Even though it may not be possible in many cases to furnish the information or explanations desired, we will be better able to assist the electro platers through the more intimate knowledge thus gained regarding their needs and requirements.

Editor's Note—We publish this report, made by Dr. Wm. Blum at the Rochester Convention, to show clearly to our entire membership the interest taken by the Bureau of Standards in our Society. The letter of the Research and Standardization Committee has a very close relation to this report.

MARY HAS THE "FLU"

Mary had a little skirt,
It barely reached her knees;
She also had a little waist—
Which left her back to freeze.

She sauntered out one chilly day
To show her pretty clothes,
But, sad to say, when she came in,
She had it up her nose.

And now poor Mary's sick in bed,
She don't know what to do;
Her clothes will all go out of style—
While Mary has the "flu."

CREDIT WITHHELD

"My friend," said the industrious man, "when I was your age I thought nothing of working fourteen hours a day."

"Yes," replied the complacent youth, "in those days there were no moving pictures and no golf. What else was there for you to do with your time?"

DISCUSSION ON NICKEL PLATING SHEET ZINC ARTICLES

Paper Published in August "Monthly Review"

By Henry Wiesner, Electro-Plating Engineer

Q. I should like to ask if the sodium carbonate in that solution would not precipitate some of the nickel to a certain degree?

MR. PROCTOR: I have visited the plant in question many times and have seen the nickel plating done on quite an extensive scale by this solution. The stock solutions that I have originally made up have been absolutely clear, showing no precipitation. But I have experimented with the same solutions and found that there was a slight precipitation of nickel carbonate. Of course, that is readily overcome by the addition of more citric acid. However, in experiments that I have made lately, I found that a solution made up of:

Water	1 gallon
Double nickel salts	8 ounces
Common salt	4 ounces
Citric acid	½ ounce

will plate zinc and die castings just as readily without any black streaks, without any preliminary deposit of copper or brass, proving that it is not necessary to have a complicated solution for plating zinc.

I might state that the solution plated quite readily on sheet zinc at 2½ volts. When any brown spots are noted, no black streaks developed, but when brown spots are noted, it is an indication that the solution requires a slight amount more of citric acid. I have samples that have been plated in this manner and I think it makes a very successful solution for die castings or plating sheet zinc.

MR. MUSICK: You say you have plated die castings?

MR. PROCTOR: Yes.

MR. MUSICK: Did it plate white in the recesses?

MR. PROCTOR: I did not have the time to make experiments with deep recesses. Experiments are being made, however.

MR. WITTICK: Was this solution agitated?

MR. PROCTOR: It was a still solution.

Q.: Did this solution plate successfully over zinc sulphate?

A.: It will, provided it is cleansed successfully.

Q.: What voltage do you use for the die castings?

A.: I use 2½ volts, but like all these solutions, it is always advisable to use a little more voltage—say 3 and 3½. I might further say that I had not tried out the solutions for die castings, and when I was in Chicago I went to Hanlon Brothers to try out the solutions. We took some of the die castings of frames that are used extensively now in automobiles, and the frames were broken in two and showed no indication of the separation of the nickel from the zinc. I make this statement because I am very familiar with the plant.

MR. RICHARDS: It has to be put in a solution which has sufficient conductivity and metallic contents to enable the plating to go through quickly. It can be done by any solution by the use of motion. Motion would enable the use of sufficient current to plate it over quickly.

The black streaks that come in nickel, coming generally down this way, are really little parts that do not get plated quickly enough, and therefore they turn black. Zinc and die castings can be plated in any solution that will plate anything else by the use of motion and, in a general way, you can say that any solution with sufficient contents and conductivity can be used to plate zinc if you give it sufficient space and the conditions that will get the coat over quickly. I think it is a matter of metallic contents, a matter of conductivity and a matter of conditions enabling the zinc to plate the deposit over it quickly. If you put a sheet of brass or copper in your solution, you would find little parts which were not plated. If that was zinc those parts would be black, but in brass and other metals which do not corrode so quickly as zinc they will be covered and will be satisfactory.

MR. HERRICK: During the past year in the Providence-Attleboro Branch, one of our members did considerable work on small zinc parts; and also in Boston one of our radio concerns had had a great deal of experience with die castings. The same formula has been used in both concerns, and it consisted of:

Water	1 gallon
Double nickel salts	8 ounces
Single nickel salts	2 ounces
Magnesium sulphate	2 ounces
Hydrochloric acid	½ ounce
Boracic acid	½ ounce

In making up this solution the hydrochloric acid and the boracic acid should always be added in equal proportions. A voltage from 2½ to 4 volts has been used. On zinc, whether it is polished, small sheets or large sheets, in a still soluton, you will find a very rapid deposit covering perfectly and clearly, without any black spots or dark streaks or oxidization whatsoever. On zinc plated work, either zinc sulphate or zinc cyanide solution; on iron or steel, if the work is rinsed out properly, you

will have similar results. Small hollow work can also be plated in this solution with an increase of voltage giving about 8 volts to the tank.

Die castings washed in the usual way, through your electrical cleaners, if they are free from oxidation before entering the solution, will plate very readily and the recesses will also be white. Your deposit will also be very clear and very seldom will you find it to run cloudy. That soluton has never failed us for over a year past.

Q.: I should like to ask what percentage of strength does that hydrochloric acid have?

A.: 30%.

Q.: I am interested in plating die castings on the inside, if you can picture what a ¾ inch tee would be on the inside. Do you think that solution would plate that if properly racked so that the openings are exposed?

A.: I do not doubt but that it will penetrate into those tees. In Cambridge they have a cat (?) which is over an inch deep, which is plated on the inside, white nickel inside, and it is finished with a black crystaline japan finish on the outside. The nickel is plated on before the japan is put on and after that subjected to the heat of the ovens to get the crystaline effect on the japan. And they are getting them always white.

Q.: Does he recommend it for barrel plate on brass?

A.: Yes; on everything.

Q.: Is it bright?

A.: Very bright.

Q.: Brittle or soft?

A.: Soft.

Q.: Can be burnished?

A.: Yes.

MR. MADSEN: I should like to make a general comment on plating zinc and die castings with nickel. My experiments show that much depends on the electrical characteristics of the set used. I have been called on to make examination of two different deposition outfits using exactly the same solution essentially that of Dr. Watts. One obtained perfect results, the other one was a failure. We found that in one case the old type generator was used whose voltage would drop on adding a heavy load, while the other one maintained a constant voltage, and the most desirable condition would be a generating set whose voltage raises on adding a load. I think from that, that much of the differences of opinion and discussion about the utility of various

solutions for zinc plating will disappear if that condition is looked into, and I agree with one of the speakers, that nearly any solution having sufficient metal content which will plate anything will plate zinc and die castings if it is done fast enough, but that condition cannot be fulfilled unless the generating set has the correct characteristics, preferably either constant voltage or a rising voltage on load addition, and I recommend for the work that either the line voltage be maintained at 6 to 8 volts and all of the work dropped in at once with the full voltage on for a few seconds, then diminished, or else that each tank be equipped with the resistance to accomplish the same purpose maintaining a constant line voltage of 8 or 10 volts.

MR. HERRICK: There is one other thing to take into consideration in regard to die castings, and that is the composition of your die casting. A good many concerns have a specified formula for their die castings. It was a pleasure to me at one time to have our concern make up a set of specifications calling for certain ingredients in our die castings. For a while maintaining that same voltage I had no trouble, but once in a while I would see the black streaks appear, and then I began to find that the concerns making die castings are not all infallible. There are many times that your zinc content of your die castings has been pushed up from 10 to 20 per cent. Therefore, when your zinc content of your die castings is pushed up, you should push up your edges a little on your tanks.

MR. WILSON: I have a spray top, the perforated part of which is zinc; the back is brass, and in operating the sprays, they go through the back and expose the brass, which necessarily have to be plated over. I should like to remove the nickel from the zinc without damaging the zinc or the brass.

Q.: Remove the nickel from the zinc and the brass?

A.: Yes.

A.: We use sulphuric acid without any water or anything else in it. We use that as electrode strip. When you are through stripping, you take the iron handles off.

Q.: Do you make any other addition to the solution?

A.: No; just commercial sulphuric acid.

Q.: Does the sulphuric acid attack the zinc?

A.: No.

Q.: How long can you continue to strip zinc in such a solution?

A.: I have a stripper down there now which has been in use for two or three years and the only thing you will have to do is to take the sediment out of the bottom.

Q.: Would you not wish to emphasize the fact that you must keep the water out of that?

A.: We do not keep water out. The strips are perfectly dry.

Q.: If the water was added, would it not attack the zinc?

A.: I never get any water with mine.

Q.: Would that strip a combination of brass and antimony lead?

A.: Yes, I think so. We used to do job plating and I used to strip everything. The secret is to have a high voltage when you are putting the sheets in the tank. I generally have from 6 to 6½ volts, and that is the secret of nickel plating zinc.

Q.: You do quite a few sheets, I think?

A.: We average about between 250,000 to 300,000 pounds a month.

Q.: About 36 inches wide and about as tall as you are?

A.: Not exactly. There are some 19½ inches long. All different types. I think that is the secret. Have the voltage high while you strike it.

Q.: What solution do you plate the sheet zinc with?

A.: I use nothing but single nickel salts. About six ounces to the gallon:

Magnesium sulphate	2 ounces
Ammonium chloride	2 ounces

Q.: Do you use a copper strike before zinc plating?

A.: Yes. We used to use a combination of copper and cleaning, but I now use a separate clean and then copper strike them afterwards.

Q.: What is your voltage?

A.: Six and 6½ volts.

Q.: You are striking sheet zinc but you are not plating it in a nickel solution until it is covered with copper?

A.: No.

I wish to say that I found good results when I added water to the sulphuric acid, bringing it down from 66 to 50 degrees. I have stripped copper and brass quite a bit, and when the color does not come out to suit me I find beneficial results from adding one ounce of glycerine to the gallon. If you are going to strip any brass, try that and see if it does any good. I have here a formula:

Sulphuric acid	1 gallon
Water.	2 gallons
Glycerine.	2 ounces

A great many of the boys who have been using a stripping solution find they got very good results with it until the specific gravity gets below 50. It is all right above 50, but do not get it below 50. If you do you are sure to ruin the work. They will come out pitted.

Q.: Do you have any difficulties in the copper solution running to the brass?

A.: Yes, once in a while. You have to keep your metallic contents very high. I ovecome that by adding a little more cyanide and hyposylphide of soda.

SUCCESSFUL METHODS

Ques. No. 1: Will magnesium sulphate cause a nickel solution to plate dark?

Ans.: No; but if the solution is not kept slightly acid there is a possibility of magnesium hydroxide depositing with the nickel.

Ques. No. 2: What can be used to remove light scale from finely tempered steel that will not affect the steel?

Ans.: Two methods were suggested—make it an anode in an electric pickle or tumble with some kind of abrasive.

Ques. No. 3: What is the cause of a brass solution plating red on lower edges, otherwise plates a good green color.

Ans.: Not enough cyanide.

Ques. No. 4: How can aluminum reflectors be silver plated successfully?

Ans.: No one was able to answer this question.

Ques. No. 5: What is the best way to remove burnt oil and scale from steel stamping?

Ans.: Twenty or 30% hot muriatic acid solution followed by a dip in nitric acid, then back in cold muriatic.

Ques. No. 6: What is a good lubricant for ball burnishing?

Ans.: Twenty-five pounds soap chips, 13 pounds soda, boiled in 50 gallons of water and cooled.

Ques. No. 7: Can a design be silver plated on hard rubber and prove satisfactory?

Ans.: Yes; by plating the rubber all over and then etching the design. **—Chicago Branch.**

Ques. No. 1: What is a good bright dip for die castings that have oil and carbon on them?

Ans.: Die castings cannot be bright dipped to the original color on account of the high percentage of zinc in them.

Ques. No. 2: Why does nickel on brass cut through on the buff quicker than nickel on steel, both being plated the same length of time?

As there was no decisive answer on this, it will be taken up later, with samples. **—Indianapolis Branch.**

SANITATION

By Geo. A. Wilson, New York Branch

Read at Rochester Convention

Fifty years ago there was no such profession as sanitation. There were a number of persons interested in public health questions and sanitary problems. But these were the philanthropists and public spirited men, the pioneers of sanitary reform, who strove to better the conditions of their fellow-men, to lower the death rate of the community and to inculcate into the minds of the people the wise saying of Franklin, that "Public health is public wealth."

Wholesome environments will stimulate men to do their best and ultimately lead to the elimination of unnecessary waste which comes from that "I don't care" attitude.

Let us have the courage of admitting the error of some of our ways. It may be painful for a while, but it promises success and greater happiness for all in the future.

You will find in many shops no windows to the outer air and foul, bad odors are prevalent. Proper fire protections are lacking; halls and stairways are neglected and filthy. These antiquated shops are a menace to the general welfare, not only of those who work in them, but to the community as a whole. The lack of suitable working conditions has long existed and measure no prospect of improvement in the future, unless radical measures are taken through far-reaching remedial legislation.

The factory laws of most states demand washrooms and toilet accommodations for employee, and as the law compels janitors to be engaged for tenement houses, there is still more reason to require factories, where hundreds of persons are working, to be kept clean and in good sanitary condition by special caretakers.

All plating rooms should be constructed for that purpose, and the usual plan of adapting any ramshackle out-of-date building unfit for any other purpose, as is frequently the case, should be legislatively prohibited. The legal minimum of 400 cubic feet of space for each worker established by several legislatures is entirely inadequate. There should be at least 1,600 cubic feet for each individual.

Again, the practice of washing promiscuously in rinsing tanks is a very dangerous habit which should not be tolerated. Proper washing receptacles should be provided with clean running water in every department.

VENTILATION

Ventilation means the supplying of fresh air to a room or building for the purpose of improving its condition as regards the comfort and healthfulness of its occupants, and a system of ventilation comprises any arrangement or special apparatus for bringing about this result.

An air washer removes the impurities from the entering air by passing it through a thick spray of water instead of cloth, as in the case of dry filter. This process removes a very large percentage of the dry foreign matter contained in the air without offering the resistance of the average dry filter. The excess of moisture is removed from the air by passing it through a series of baffle plates or eliminators after leaving the spray chamber. Purifiers of this type also act as air coolers in the summer time and are therefore of special value in the ventilation of humid shops.

The manufacturers of leading makes of washers guarantee to remove not less than 98 per cent of solid matter passing through them; also to remove gases which are soluble in water, and some odors.

In practice it is customary to base the supply on the number of occupants and the purpose for which the room or building is to be used.

Laws in certain states fix the volume to be supplied—in most cases 32 cubic feet per minute per occupant. But in plating and polishing rooms 75 to 100 cubic feet per minute will not be too great.

It is possible for a man to live three weeks without food; three days without water, but only three minutes without air. Hence an abundance of fresh air is a matter of utmost importance in all rooms which are to be continuously occupied, especially the plating and polishing room.

Vitiated atmosphere lowers the vitality and therefore increases the susceptibility to diseases; that it decreases both the physical and mental capacity for work has been proven, in many cases, by the increased output in shops where efficient systems of ventilation have been installed.

Statistics show a decrease of 70 to 90 per cent in death rate by proper ventilation.

There's no denying the fact that production is measured by the physical and mental fitness of workmen, that pure air is just as essential as pure food, so give us air—more air—pure air.

Mr. Wilson is with the Bress Mfg. Co., 345 Elbert St., Brooklyn, N. Y.

Mr. Fraine opened the discussion as follows:

I want to say that the paper is a very timely one, because we all know the conditions under which our men work in most factories are not of the best. I should like to take exception to one statement of Mr. Wilson, in which he says that no proper toilet conditions are enforced by law. You will find in the State of Ohio, for instance, that there is a law that there must be at least one toilet for every 25 employees in any plant.

More than that. We do find that at the present time more thought is being given to sanitation in plants, not so much for the sake of the health of the employees, but for better production, because they realize that men work better under proper sanitary conditions.

One of the big factors is proper ventilation. While it is necessary that we have a constant flow of fresh air through a building, another factor is that even if we do not have that constant flow of fresh air, if the air is in circulation you will still get good results, because even foul air that is kept in circulation is not nearly so bad as air that is stagnant.

Another big factor in health conditions is the proper humidity. We have made considerable research work in that line to determine at what point the air is best in regard to humidity, and if I recollect correctly, I think that 55 per cent is the proper degree for the best humidity conditions.

All these things have an effect on the condition of the men working, and it is something to which the manufacturers are giving more attention, because they are beginning to realize that the men produce more and better work if they work under proper conditions.

As we all become better enlightened along this line, as manufacturers see it is to their interest to provide better working conditions, better ventilation, it is going to mean that we will have a better grade of building provided and the health of our men will improve.

I congratulate Mr. Wilson on his paper. It certainly is a fine one and calls attention to something that needs more consideration.

In regard to polishing and plating departments, we know that as a rule they are exceptionally poor. But even that situation is being improved, because as the manufacturers realize the need of better ventilation, they are going after the points that need it most, and naturally they get to the polishing and plating rooms, find the great need for sanitary conditions, and generally begin their plans for general house cleaning there.

VALENCE

By Dr. A. W. Claflin.

Read at Providence-Attleboro Branch

Many who have not had the benefit of instruction in chemistry and who are not familiar with the rules governing chemical combinations, will no doubt be interested in the classification of the most familiar elements as arranged.

Valence is the degree of combining power of a chemical atom (or radical). Hydrogen being the unit of combination, all elements are classed in the table as to the number of atoms which it takes to unite with or take the place of hydrogen. The elements whose most important combinations are formed by union of one atom for one atom of hydrogen, are called monads. Those that require two atoms to form their principal combinations are called dyads; three—triads; four—terads; five—pentads; six—sexads; seven—heptads, respectively.

Atoms with odd valence are termed perissades and those with even valence artiads. The atoms of elements are electro, positive or negative. The positive atoms go to the negative pole in electrolysis and in combination with hydrogen, form bases. The negative atoms go to the positive pole and in combination with hydrogen, form acids. Some elements, as H.As.St.Bi.Ti.Sn., act as positive or negative at times.

Salts, and how they are formed, was illustrated when showing application of valence. Salts are a combination of an acid with a base. To form the salt, sulphate of copper:

Cu plus H_2 So $_4$ equals Cu So_4 plus H_2.

Cu being a dyad (valence 2) and being more positive than H, it replaces the two atoms of hydrogen.

Zinc Chloride: Zn plus $_2$HCL equals Zn CL_2 plus H_2

The same occurs again with the exception that it was necessary to take two parts of HCL, as Zn, being a dyad, it would not combine with $_1$H.

Ag plus HNO_3 equals Ag NO_3 plus H.

Ag with valence of one replacing the more negative H/.

$_3$HCL plus HNO_3 plus Au equals $AuCL_3$ plus NO_2 plus H_2O.

Au with valence of $_3$ replaces $_3$ atoms of H. The NO_3 gives up $_1$ atom of O. (nitrous oxide is given off and H_2O remains

All salts formed by acids ending in **Ic** are called **Ate**—Sulphate of Copper (Cu plus H_2SO_4), Sulphate Zinc, Nitrate Silver, etc. All salts formed by acids ending in **us** are called **ite**; Sulphite Soda (Na plus H_2SO_3).

An acid salt is one where all the H/ has not been replaced.

Na plus H_2SO_4 equals Na H SO_4 plus H.

Na being a monad replaces $_1$ atom of H leaving one H in salt.

As most all are familiar with gold and silver cyanide solutions, the following combinations will be of interest: Ag NO_3 plus Na CN equals Ag CN plus Na NO_3. In this equation NO_3 and CN (radicals) are replacing one another.

VALENCE TABLE

1		2		3	4	1—2	2—3	3—5
Li	F	Ba	Mg	B	C	Cu	Fe	As
Na	Cl	Sr	Zn	Al	Si	Pd	Co	Sb
K	Br	Ca	Cd			Hg		N
Pb	I	Ra	Mn			1—3	2—4	**B**
Cs		O				Au	Sn Pt	Bi
		S						
H								
Ag								

COMMON ACIDS

H_2 SO 4 Sulphuric forms ate salts
HCL Hydrocloric forms ate salts
HNO_3 Nitric forms ate salts
H_2SO_3 Sulphurous forms ite salts

Boston.

President, Andrew Mackie, 831½ East 2nd St., South Boston, Mass.; Secy.-Treas., A. Talamono, 70 Yorktown St., East Somerville, Mass.

A letter just received from Secretary A. W. Garrett states that meetings are now being held on the first and third Fridays of each month at the Quincy House. Applications for membership were received from Messrs. John Dranie, 48 Cread St., Worcester, Mass., and Chas. H. Morton, 60 Columbus Ave., Waltham, Mass. Mr. Herrick told us all about the convention, and at the next meeting will give a talk on the fitting of nickel work. The success of Boston Branch is assured and a busy season is ahead of us.

Jenkins was sitting down to breakfast one morning when he was astounded to see in the paper an announcement of his own death. He rang up his friend Smith at once. "Halloa, Smith," he said. "Have you seen the announcement of my death in the paper?"

"Yes," replied Smith. "Where are you speaking from?"

Young Jack was talking to the new visitor soon after her arrival. He eyed her critically for a few moments, then looked up and said: "So you're my grandmother, are you?"

"Yes, dear. On your father's side," replied the old lady, smiling.

"Well, you're on the wrong side; you'll find that out," replied Jack.

A SURE CURE FOR THE SO-CALLED "NICKEL-ITCH"

By Mr. H. E. Armour, Milwaukee Branch

Many of our plating rooms are not sufficiently ventilated and fumes are not carried off as readily as they should be. This is caused by lack of investigation in regard to this matter.

The affliction which heretofore has been termed the "Nickel-Itch" has proven by careful investigation to be what is called "Eczema of the Trade," an affliction peculiar to platers, soap makers, and others employed in the presence of hot acids, alkalies and concentrate solutions of salts.

There is only one class of men that are affected with this affliction and that is those with **very tender skin,** which seems to be the main cause of the eruption.

In this affliction the minute blood-vessels are congested, causing the skin to be more vascular and redder than in its natural state. There is an itching or smarting in the affected parts, and the patient can hardly control himself from scratching the affected parts severely. When the skin is so irritated by scratching the skin is raised in the form of little pimples, and a watery lymph exudes. Sometimes due to irritation the skin becomes detached and is replaced by a crust of hardened lymph, or it may be partially replaced, forming scales; a slight swelling of the affected parts is also noticed and unless immediate attention is given to the affliction the patient will often wish that he had died in his younger days.

The treatment of this affliction is not complicated, but must be radically adhered to—the first thing an affected person must do is to leave the plating room immediately—this is important and must be done. Apply local applications of the following ointment and cover freely with the dusting powder.

It is best to apply the ointment and powder before bedtime and bathe the affected parts with milk in the morning. No soap of any kind must be used until the affection is fully cured. When the pimples and redness are gone apply sweet oil to the affected parts and rub in well.

Ointment Formula

Unguentum Aquae Rosae (Cold Cream)..20 grams.
Zinc Oxide ..... 6 grams.
Boric Acid ..... 3 grams.
Ammonium Ichthyolsulphonate..... 3 grams.
Directions: Apply a thin coat to the parts affected

Dusting Powder

Zinc Stearate .....50 grams.
Talcum Powder (pure) .....50 grams.

Directions: Use freely on parts covered with ointment.

Hoping that this information may be of some help to those suffering from this affliction, this paper is sincerely dedicated.

WHAT THE BRANCHES ARE DOING

Bridgeport

Meets third Friday of each month in its laboratory, 260 John St., Bridgeport, Conn. Secretary, Louis J. Maraffi, 744 Hancock Ave., Bridgeport, Conn.

Our August 20th meeting was held in the laboratory with eleven members present.

The minutes of the previous meeting were read and accepted.

It was voted that the Chair appoint a committee of three to make a report at the next meeting on painting and general cleaning of the laboratory. Committee consists of Messrs. Slattery, Thompson and Rall.

A discussion on "Safety Don'ts" was held in regard to using cyanide for washing hands; eating of lunches, etc., in plating rooms, and instructions to new men on handling cyanide and watching their hands for the first few days.

The meeting was adjourned at 10:30.

Chicago

Meets second Saturday of each month, 8 p. m., at the Briggs House, Randolph and Wells Sts. Secretary, R. J. Hazucha, 4224 W. 20th St., Chicago, Ill.

Our last regular meeting, held September 11th, was well attended. Besides having a lot of questions in the question box we had the pleasure of having with us Dr. Wm. Blum from Bureau of Standards, Washington, D. C. He gave us a short talk on different plating subjects, and also took part in discussing questions, which proved very interesting.

We elected two applicants to membership, and also received two more applications. Our membership now numbers 144 and we hope to reach the 150 mark this year, so if any of the Chicago Branch members have a prospect, kindly send his name to the secretary.

A communication was read from the Supreme Secretary pertaining to the referendum vote. Each and every member should vote at the next meeting, and if unable to be present he should vote by mail.

The Librarian had the following questions in the question box (see Successful Methods):

Cincinnati

Meets on the first and third Friday of each month at Dennison Hotel. Secretary, W. J. Husing, 729 McMakin Ave., Cincinnati, O.

Our meeting on Sept. 3rd was well attended and there was much discussion on the new amendments. A ballot is being taken on the referendum of admitting assistant platers. We look for a good year.

Cleveland

The Cleveland Branch meets every second and last Saturday of the month at 1344 *East Prospect St. Secretary B. F. McCormick,* 1941 *West 77th St.*

In pursuance to the request of Mr. Sterling the members of the Cleveland Branch will hold a summons meeting on Sept. 25th to vote on the proposed amending of Part 2, Article 2, Section 5 of the Constitution. We hope by this means to have our returns in early.

At our last meeting our new Librarian, Mr. Finn, demonstrated that he was on the job and intends to interest the members more deeply in the success of the American Electro-Platers' Society, if such a thing is possible. Each member received a copy of the attached letter, so no doubt the boys will soon wake up to the fact that we have a booster in the branch.

We will hold our annual picnic on Sept. 12th.

I have sent notices to all members, delinquent, for this quarter that quarterly reports must be made to the Supreme Secretary, and that they must come across by our next meeting night, Sept. 11th, so don't be surprised if you receive a number of suspensions. I have had a few complaints from the members not receiving their Reviews, but only one reported personally.

Detroit

Meets first Friday in each month at Cass Technical High School, Platers' Classroom, 2nd Avenue and Beech Street, at 8 *p. m. Secretary, E. G. Lovering,* 635 *Grand River Avenue, Detroit, Mich.*

Regular monthly meeting held Sept. 3rd. Owing to Cass school being closed the meeting was held at the Ford office, Dime Bank Building. Vice-President Brockway presided. Communication from the Supreme Secretary read, and a lengthy discussion followed on the new amendments. The Detroit Branch is handling the referendum vote on Article 2, Section 3, in their own original way, every member being officially notified and furnished with a ballot. We had a very large attendance and several visitors, including Mr. Eichstadt. He gave us a talk on how he handled the plating of booster shell. Mr. Hay of Chicago Branch was also with us and spoke on zinc plating in general. He had the pleasure of meeting the Detroit Branch, and we made Hay while the sun shined. Our co-worker, Tompkins, was also with us, returning from a trip through the East, and told us about the shops and their methods that he visited through New England. Mr. A. E. Shepherd journeyed down from Flint and added his name to the Roll of Honor for a contribution to help carry on the work of the Bureau of Standards. Mr. A. E S. believes that the American Electro-Platers' Society stands for him, so he reciprocates.

Detroit Branch is making elaborate preparations in conjunction with the Cass Technical School for their winter term and expect a large enrollment for the platers' class. Meeting adjourned at a late hour.

Indianapolis

Indianapolis Branch holds its business meeting the second Saturday in each month at Hotel Denison. Secretary, Louis Mertz, 1725 Union St., Indianapolis, Ind.

The branch held its regular meeting Sept. 11th with a fair attendance. It was decided that we make our next meeting a special meeting, to vote on the assistant platers' clause. The motion was carried to authorize the Secretary to forward the names of ten manufacturers doing plating to Mr. Fraine. As Mr. Boyd of the Lafayette Motor Co. was unable to attend the meeting, he sent in his paper on "Properties of Red Brass Castings," which was very interesting. Louis Mertz gave his experience in cleaning and plating red brass castings.

New York

New York Branch of the American Electro-Platers' Society meets every second and fourth Fridays of each month at the Broadway Central Hotel Parlors, New York, N. Y. Secretary, John Burke, 110 Glen St., Brooklyn, N. Y.

President Sterling presided at the August meetings of New York Branch of the American Electro-Platers' Society. Mr. Emil Haas was elected active member of New York Branch. The Secretary-Treasurer reported the present worth of New York Branch was $694.29.

The proposed referendum vote to admit assistant foreman platers as associate members of the American Electro-Platers' Society was lengthily discussed pro and con. Past President T. B. Haddow exhibited his magic powder, an additional agent for nickel solutions. Five members were requested to make additions of the magic powder to a nickel solution and report the effects obtained on the deposit at the next meeting. The following plating problems were discussed:

The effects of Arsenious on cast iron when used in a brass solution.

The effects of Hypo-sulphute of Sodium on oxidized copper when used in a copper solution.

The durability of nickel deposits obtained in a double chloride nickel solution.

Philadelphia

Meets first Friday of each month in the Harrison Laboratory Building, University of Pennsylvania, 34th and Spruce Sts. Secretary, Philip Uhl, 2432 North 29th St., Philadelphia.

Philadelphia Branch held its regular meeting Sept. 3rd, President Metz presiding. A committee was appointed to take up the resolution of assistant foremen joining our society. Philadelphia Branch has always been opposed to taking in the assistants, and should this amendment become law it would mean the losing of quite a lot of the old members who have built up this branch. A committee was also appointed to make arrangements for holding a meeting in Reading, Pa., on Oct. 16th, 1920, for the purpose of starting a new branch there.

Applications were received for one active and one associate member, also one transfer from Chicago Branch. Several questions were brought up in reference to two finishes and also how to prevent zinc from dissolving from zinc articles while being plated in a copper cyanide bath and replating back on the work as brass.

We were glad to hear Trustee E. T. Homan is improving after a serious operation, and hope to see him at our October meeting.

Pittsburgh

Meets every first Saturday at 8 p. m. at United States Bureau of Mines Building, Forbes St. Secretary S. E. Hedden, 227 5th St., Aspinwall, Pa.

Meeting of Sept 4th opened at 8:20 p. m., with President John Corbit in the chair. After reading of minutes of last meeting, which were approved, the communications from the Supreme Secretary-Treasurer were read and great interest taken, especially on the question of taking the vote to admit our assistant platers. A motion was duly made and seconded that the Secretary call a summons meeting for this purpose, which was carried, October 2nd, or our next meeting, being the date. The Secretary stated that he had already had letters and ballots prepared for the purpose and would send a copy to each member. After the election to active membership of three applicants, owing to the lateness of the evening, meeting closed to meet Saturday evening, Oct. 2nd, 1920.

St. Louis

Meets third Saturday of each month at Barr Branch Library, corner Jefferson and Lafayette. Secretary, H. H. Williams, 4156 Botanical Ave., St. Louis, Mo.

At our meeting on Sept. 18th, which was called to order by President C. L. Weygandt, several important questions were taken up. The Board of Managers will furnish names of firms as requested by the Research and Standardization Committee. The assistant plater amendment will be voted on at our next meeting, Oct. 16th. C. H. Howard of Indianapolis Branch was an interested visitor. A very large attendance is recorded.

The following program was presented and adopted for the coming months and material furnished will go towards a St. Louis number of the Monthly Review next May. The subjects are assigned so that several will be responsible for the success of the plan:

October—Cleansing and Pickling of Metals:
E. W. Heil, G. S. Robins, H. H. Williams.

November—Copper Plating:
H. J. Richards, H. J. Dumas.

December—Brass and Bronze Plating:
C. H. Howard, F. E. Terrio, J. Humbrecht.

January—Zinc Plating:
T. F. Carson, F. Horath, F. N. Weber.

February—Nickel Plating:
G. Lamkemeyer, W. J. Flannery, G. J. Brandt.

March—Oxidizing and Coloring of Metals:
J. H. Jordan, J. H. Hartman.

April—Silver Gold Plating:
E. W. Mueller, E. J. Musick.

May—Tin and Lead:
H. Deubelbeis, C. T. McGinley.

It was also decided to make more definite use of the Question Cards, and Geo. Lamkemeyer, our Librarian, says that he will keep the meetings lively. It is not a case of letting George do it; he can, but this time he will see that it is done.

Milwaukee.

Meets first Friday of each month at West Side Bank Building. Secretary, A. W. Ruttan, 1105 Twenty-eighth St., Milwaukee, Wis.

Providence-Attleboro.

Meets first and third Thursdays of each month at 26 Custom House Street, Room 16. Secretary, Clayton J. Poyton, 269 Ohio Avenue, Providence, R. I.

Grand Rapids.

Meets on the second Wednesday of the month at The Morton House. Secretary, J. B. Hawley, 1317 Jefferson Ave., Grand Rapids, Mich.

Toronto.

Meets second Thursday of each month at Occident Hall, Bathhurst and Queen Streets. Secretary, Chas. Kemish, 271 Boston Avenue, Toronto, Ont.

Rochester.

Meets on the fourth Fridays. Secretary, Sylvester Gartland. 128 Bryan Street, Rochester, N. Y.

Newark.

Meets first, third and fifth Fridays of each month, 8 p. m., Foresters' Home, 20 Central Ave., Newark, N. J. Secretary, O. F. Carlson, 225 West Grand St., Rahway, N. J.

Dayton.

Meets first Saturday of each month at the Y. M. C. A, Dayton, Ohio. Secretary, Alphonz Lamoureux, 432 E. Second St.

Toledo.

Toledo Branch meets 1st Tuesday night each month at Toledo University Science Building, Electro-Platers' Room, corner Cherry and Page Sts. H. L. Myers, 410 Palmer St., Secretary.

ELECTED TO MEMBERSHIP

Pittsburgh

Robt. F. Hendershot (active).....West Pittsburg, Pa.
Francis M. Wagner (active), 336 Boquet St....Pittsburgh, Pa.
George S. Thompson (active), 3942 Forbes St...Pittsburgh, Pa.

Providence-Attleboro

Park H. Masters (associate), 40 Central St.....Boston, Mass.

APPLICATIONS FOR MEMBERSHIP

Chicago

J. B. Kingsworth, 401 4th Ave.....Rock Island, Ill.
Joseph Triska (associate), 4848 Prairie Ave.....Chicago, Ill.

Philadelphia

Wm. U. Lutz (active), 522 S. 15th St.....Reading, Pa.
Gustave Kaufman (associate),.....Philadelphia, Pa.

New York

W. A. Cazalet (active), 230 7th St.....Brooklyn, N. Y.
Henry L. Hotaling (active), 9148 92nd St....Woodhaven, L. I.
Benjamin Nadel (active), 1314 Prospect Ave...New York, N. Y.

REINSTATED

Bridgeport

R. P. MacPherson, 54 Livingston Ave.....Pittsfield, Mass.

GREAT MACHINE

"I watched a wonderful machine at our shop work this morning."

"And how does it work?" we asked.

"Well," was the reply, "by means of a pedal attachment, a fulcrumed lever converts a vertical reciprocating motion into a circular movement. The principal part of the machine is a huge disk that revolves in a vertical plane. Power is applied through the axis of the disk, and work is done on the periphery, and the hardest substance, by mere impact, may be reduced to any shape."

"What is this wonderful machine?" we asked.

"A grindstone," was the reply.—Electric Experimenter.